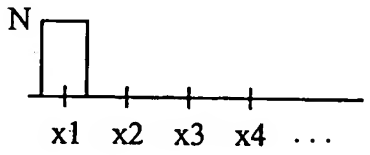
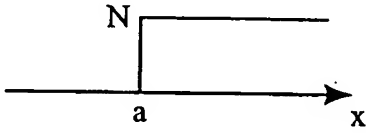
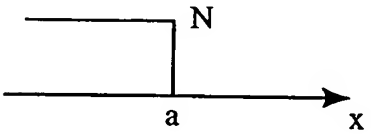
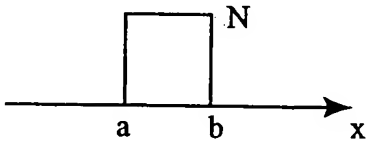
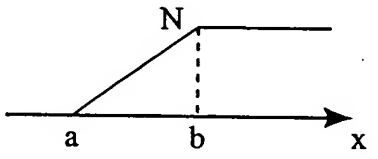
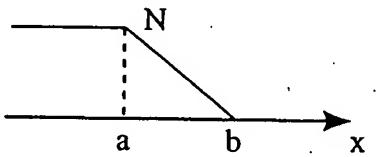
Name	Payoff Diagram	Payoff Equation
Discrete		$P = \begin{cases} N & \text{if x1 occurs} \\ 0 & \text{else} \end{cases}$
Digital Call		$P = \begin{cases} 0 & \text{if } x < a \\ N/2 & \text{if } x = a \\ N & \text{if } x > a \end{cases}$
Digital Put		$P = \begin{cases} N & \text{if } x < a \\ N/2 & \text{if } x = a \\ 0 & \text{if } x > a \end{cases}$
Digital Range		$P = \begin{cases} N & \text{if } a < x < b \\ N/2 & \text{if } x = a \text{ or } x = b \\ 0 & \text{else} \end{cases}$
Call Spread		$P = \begin{cases} 0 & \text{if } x < a \\ N\frac{(x-a)}{(b-a)} & \text{if } a < x < b \\ N & \text{if } x > b \end{cases}$
Put Spread		$P = \begin{cases} N & \text{if } x < a \\ N\frac{(b-x)}{(b-a)} & \text{if } a < x < b \\ 0 & \text{if } x > b \end{cases}$

FIG. 1 (PRIOR ART)

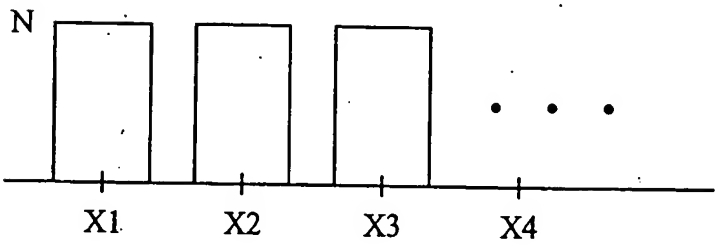


FIG. 2A

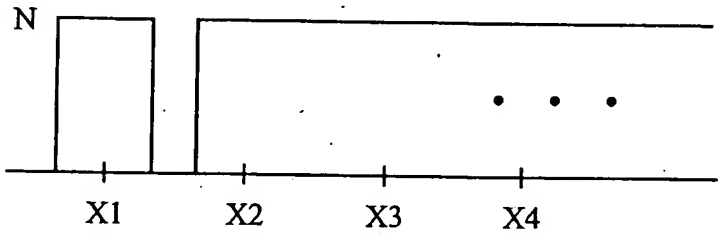


FIG. 2B

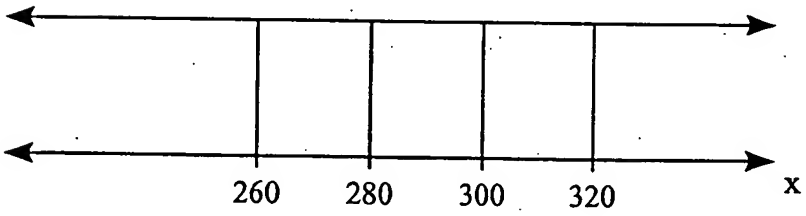


FIG. 2C

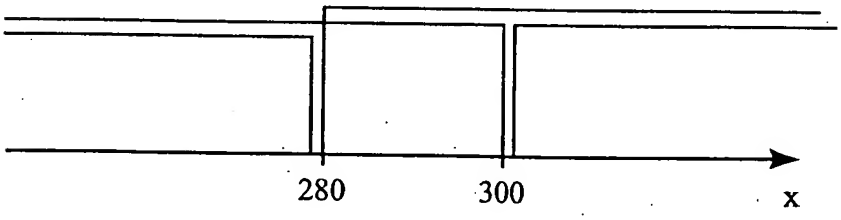


FIG. 2D

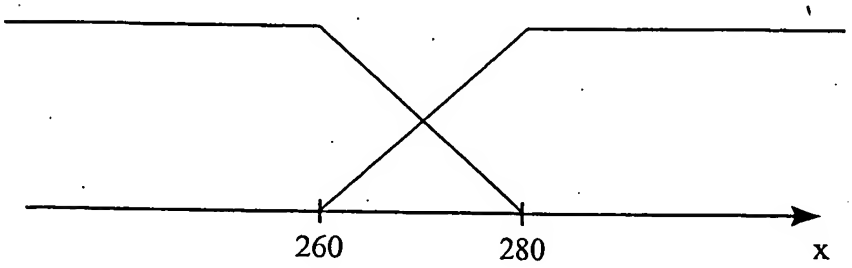


FIG. 2E

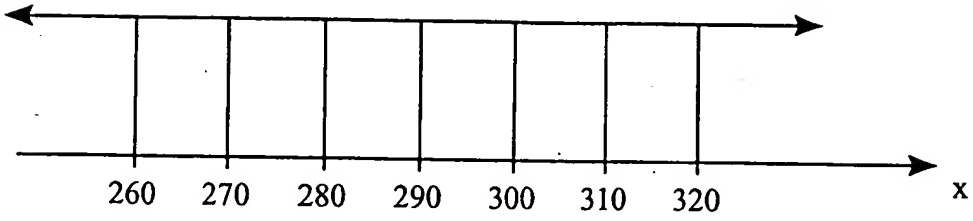


FIG. 3

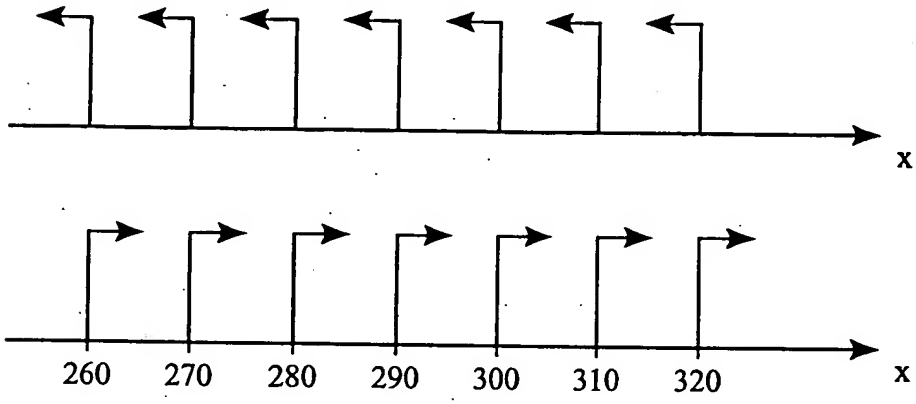


FIG. 4

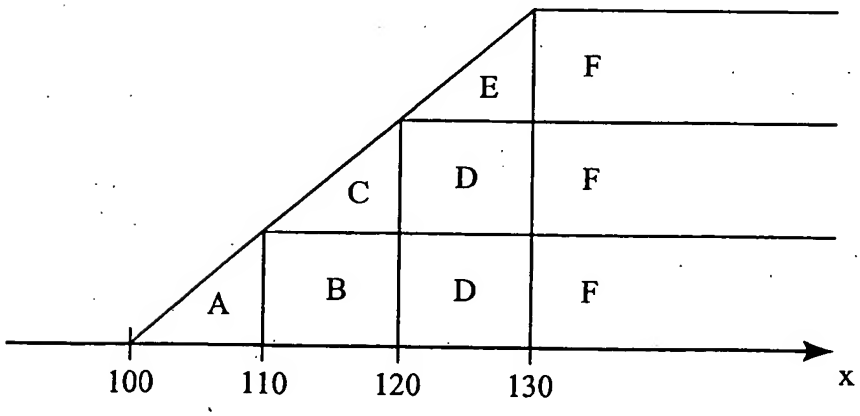


FIG. 5A

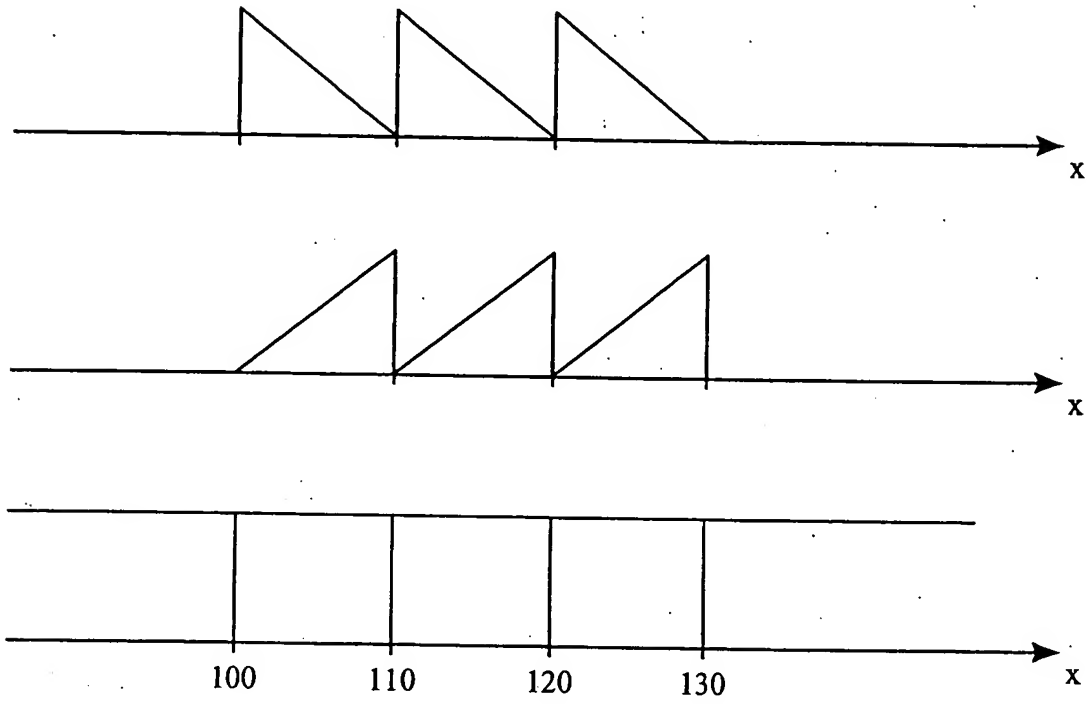


FIG. 5B

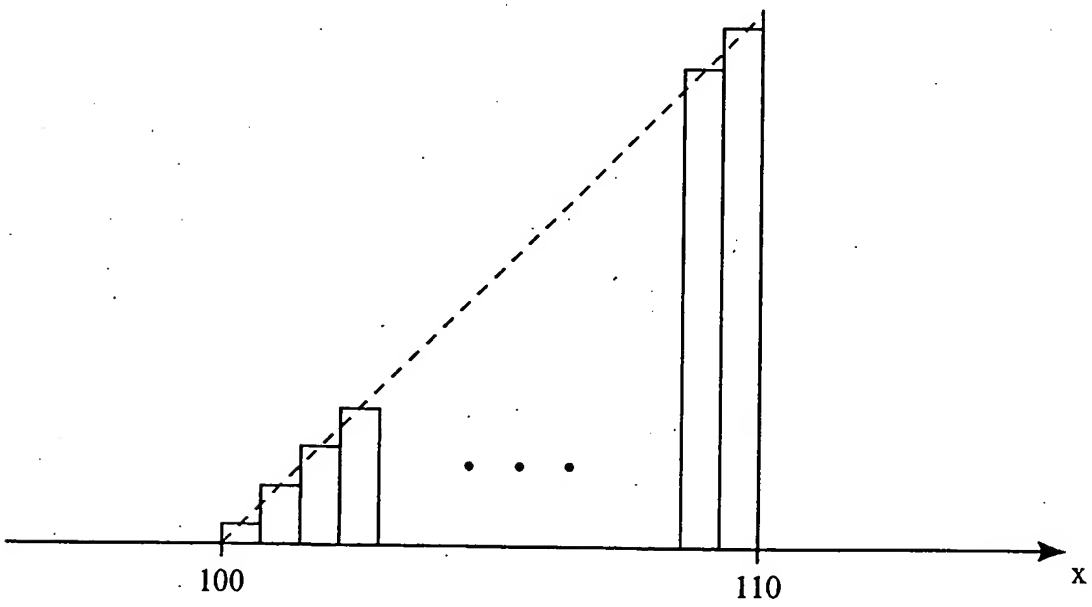


FIG. 5C

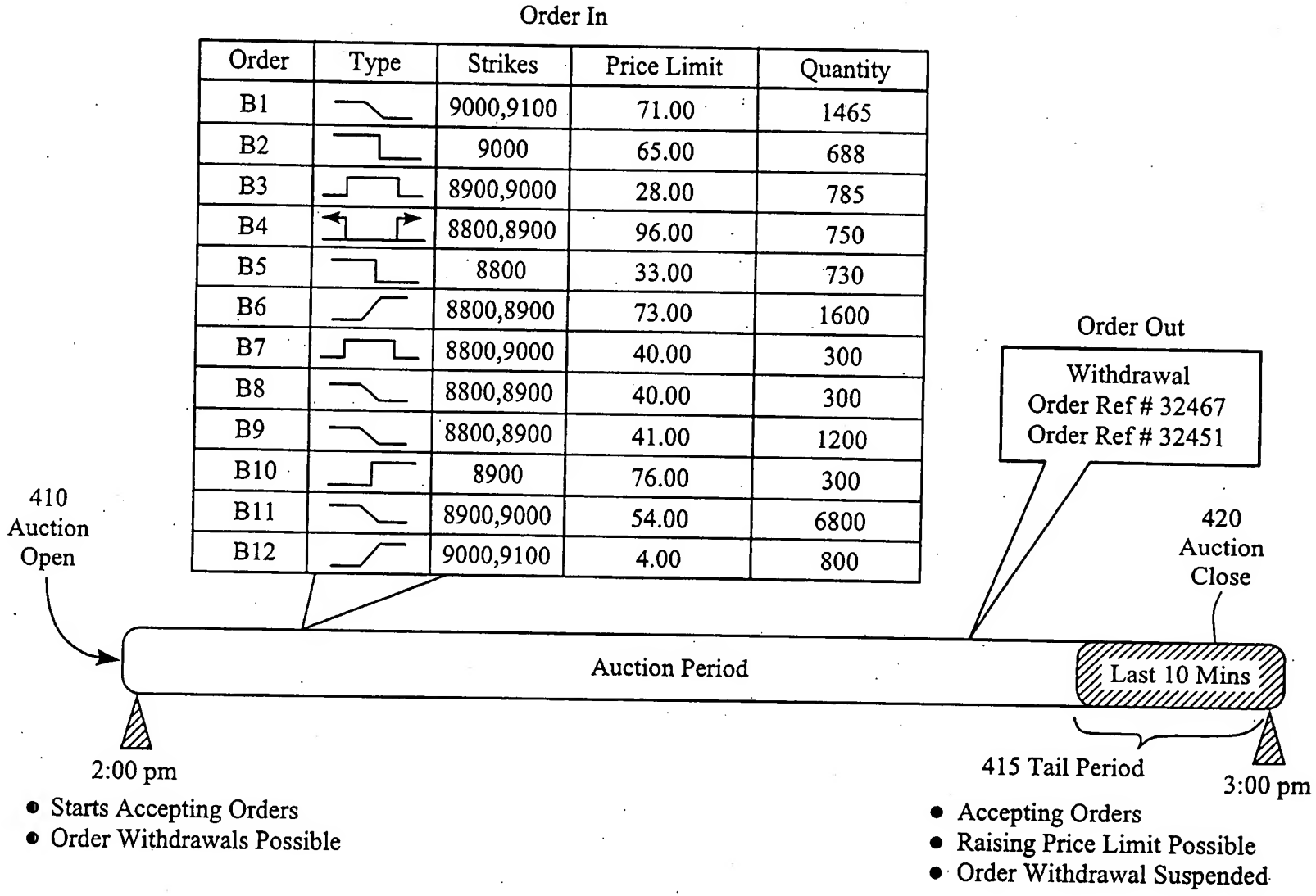


FIG. 6

Settlement of Auctions by Determining Quantity Before Price;
Inventors: KANG LE YANG et al.; Docket No.: 23876-08970

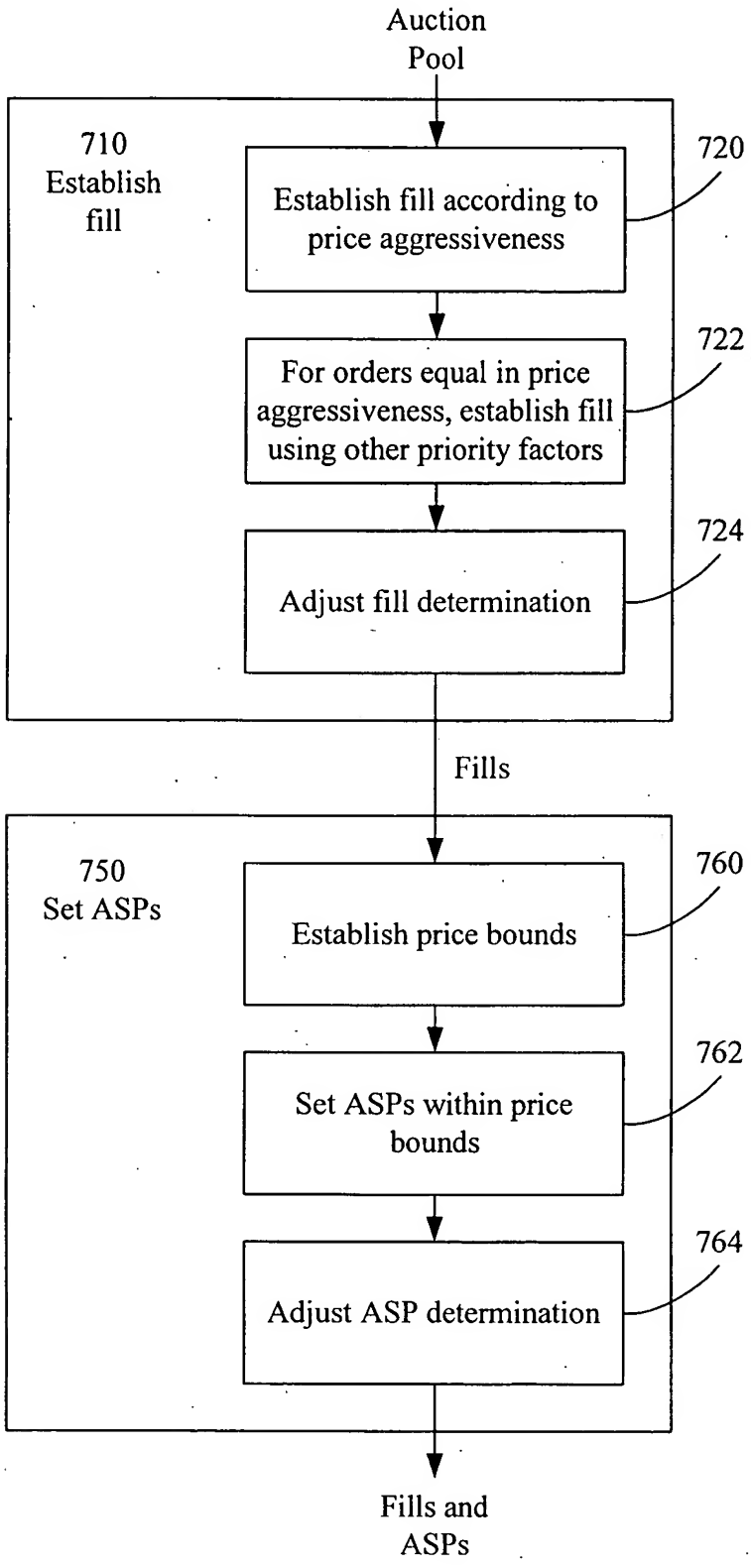

Auction Pool
710 Establish fill
Establish fill according to price aggressiveness
720
For orders equal in price aggressiveness, establish fill using other priority factors
722
Adjust fill determination
724
Fills
750 Set ASPs
Establish price bounds
760
Set ASPs within price bounds
762
Adjust ASP determination
764
Fills and ASPs

FIG. 7

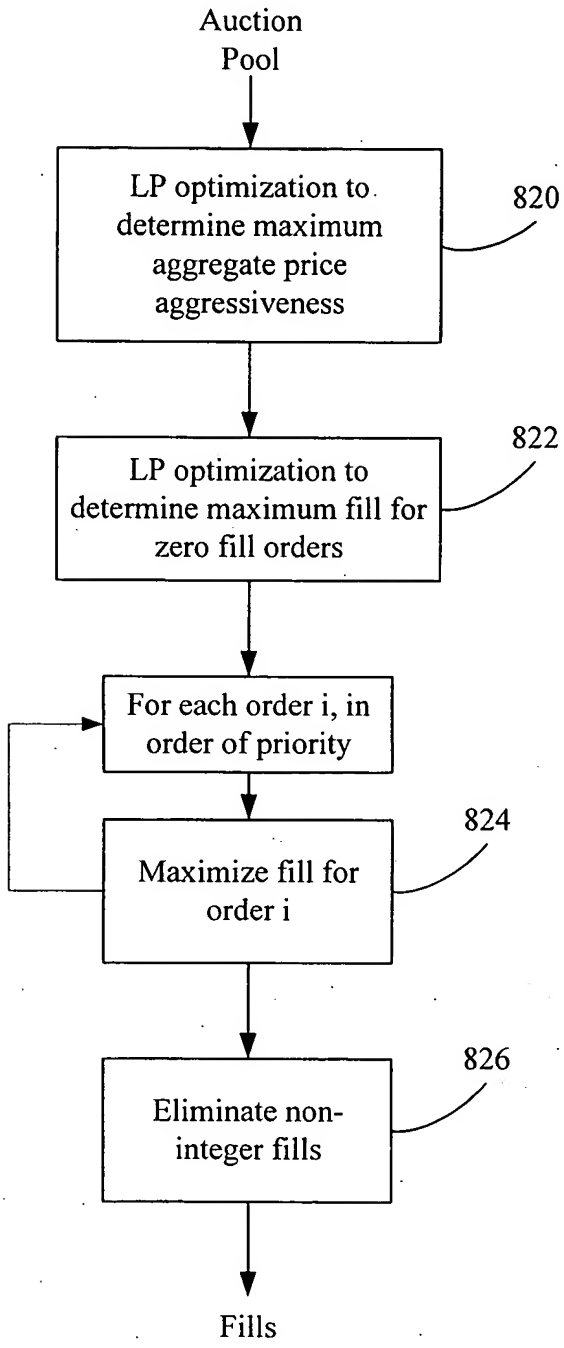

Auction Pool
LP optimization to determine maximum aggregate price aggressiveness
820
LP optimization to determine maximum fill for zero fill orders
822
For each order i, in order of priority
Maximize fill for order i
824
Eliminate non-integer fills
826
Fills

FIG. 8

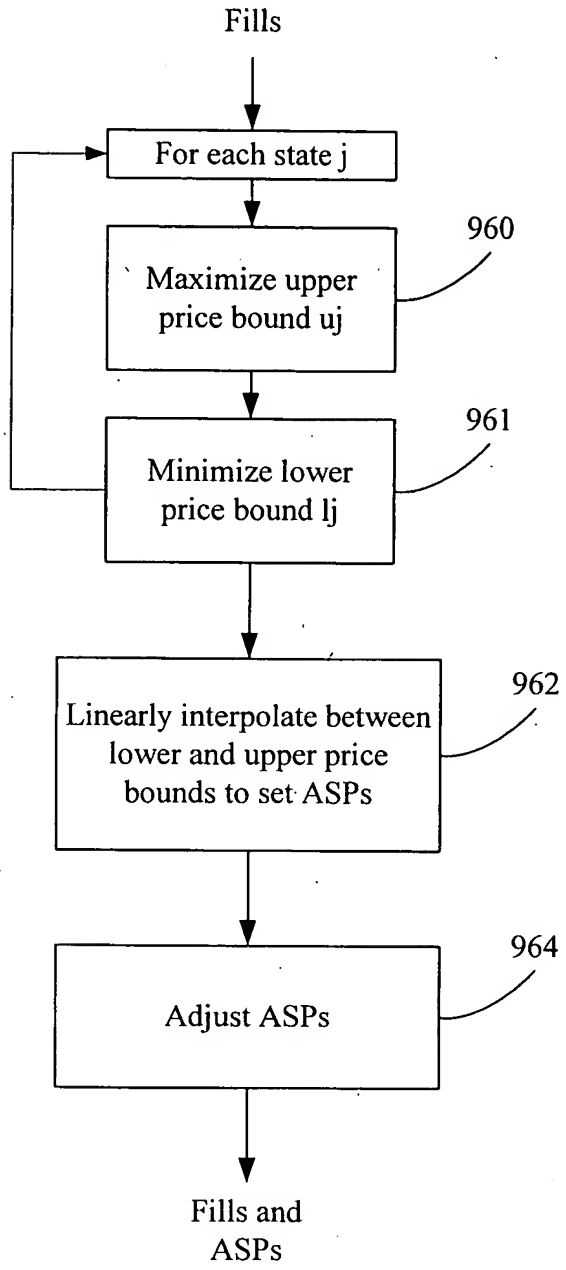

Fills
For each state j
960
Maximize upper price bound uj
961
Minimize lower price bound lj
962
Linearly interpolate between lower and upper price bounds to set ASPs
964
Adjust ASPs
Fills and ASPs

FIG. 9

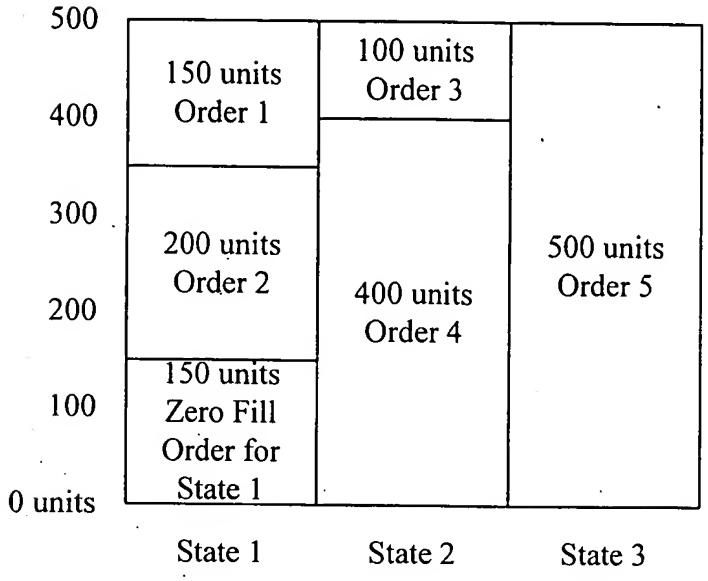

500
400
300
200
100
0 units
150 units
Order 1
200 units
Order 2
150 units
Zero Fill
Order for
State 1
100 units
Order 3
400 units
Order 4
500 units
Order 5
State 1
State 2
State 3

FIG. 10

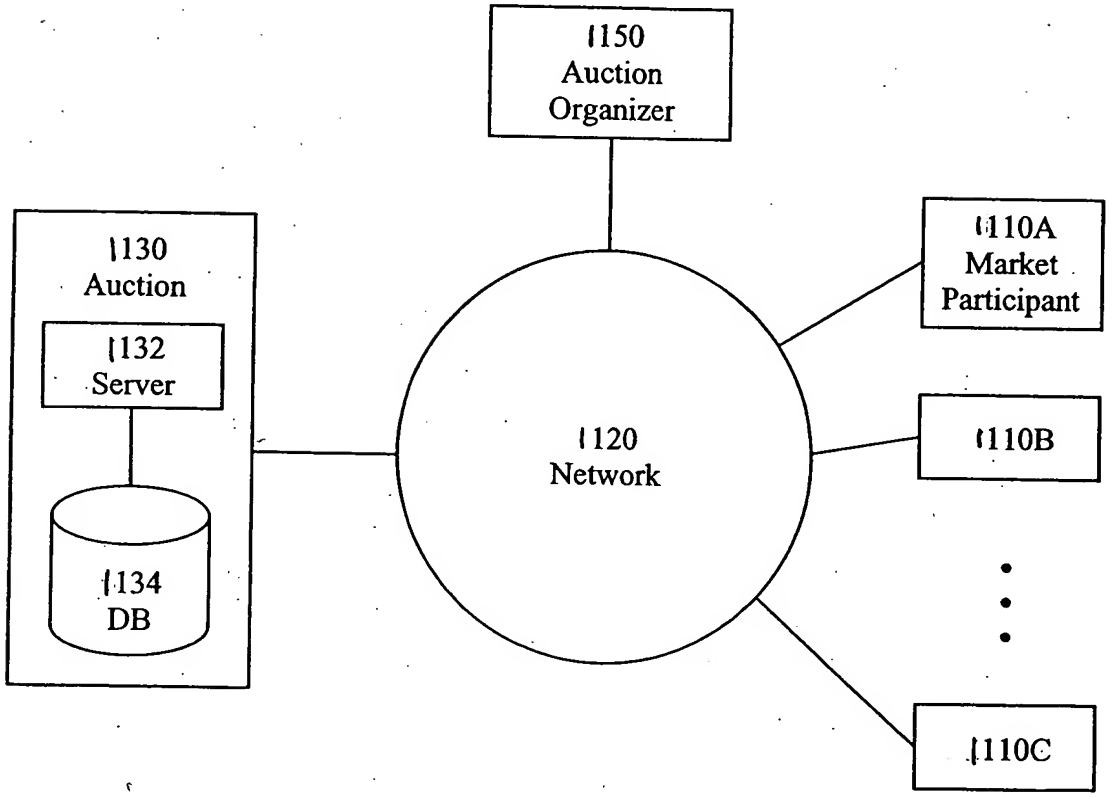

1150
Auction
Organizer
1130
Auction
1132
Server
1134
DB
1120
Network
1110A
Market
Participant
1110B
1110C

FIG. 11